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EXAMINER

HO, CHUONG T

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/354,640

Applicant(s)

GAN ET AL.

Examiner

CHUONG T HO

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-24 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The amendment filed 01/14/05 have been entered and made of record.
2. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.
3. Claims 1-24 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 8, 18, 24, 6, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Hsing et al. (U.S. Patent No. 6,167,025).

In the claim 1, see figures 17, 3a, 3b, 3c, col. 26, lines 17-28, Hsing discloses the switch 118 (non-alternative-route enable node), in response to the detection of this fault releases the locally reserved capacity associated with the call(s) affected by the fault and transmits a crank-back message to the source switch (alternative-route enable node). In FIG.17, the crank-back message is represented by the arrow and dotted line extending from switch 118, the neighboring upstream switch, to the source switch 110. In response to the crank-back message, the source ATM switch 110 attempts to find an alternative route to the destination switch and destination device. In the pre-lanned

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source routing embodiment, this will involve checking the routing table of switch 110, e.g., the table illustrated in FIG.3C, for alternative paths (see col. 26, lines 17-28); comprising:

- A network for forwarding packets from a source device (102) to a destination device (104), network including a plurality of network element (110, 112, 114, 116, 118, 120, 122, 124, 126) including a plurality of nodes and connecting link, the plurality of nodes including at least one alternative-route-enable node (110) and at least one non-alternative-route-enable node (118), wherein the at least one non-alternative-route-enable node comprises:
- A storage space to store an initial route from the source device to the destination device (see routing table, figure 2);
- A mechanism to detect failure in a downstream network element in the initial route (see col. 26, lines 17-28);
- Forward failure message upstream along the initial route to an alternative-route-enable node (110) (see col. 23, lines 36-38, if the switch (118) does not have the capacity to handle the call being re-routed operation proceed to step 1510 and the switch (118) generates a crank-back message along the newly establish path back to the source switch (110)), the failure message causing the alternative-route-enable node to being forwarding packet on an alternative route (see col. 26, lines 17-28).

Thus, it is inherent in the system of Hsing (U.S.Patent No. 6,167,025) to automatically forward a failure upstream along the initial route to an alternative-route-

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enable node (110), the failure message causing the alternative-route-enabled node (110) to begin forwarding packets on an alternative route.

5. In the claim 8, Hsing discloses determining an initial route (primary path, see figure 3a) the initial route including at least one alternative-route enabled node (110) and at least one non-alternative-route-enabled node (118) (see figure 17, col.26, lines 17-28);

- determining an alternative route by identifying the at least one alternative-route-enabled node (110) in the initial route, identifying downstream interconnected elements, and generating the alternative route (see figures 3a, 3b, 3c) based on the identified at least one alternative-route-enabled node (110) and the identified downstream interconnected elements (110, 112, 114, 116, 118, 120, 122, 124, 126) (see figure 17);
- forwarding packets on the initial route; detecting a failed element (116) (see col. 24, lines 17-28);
- forwarding packets on the alternative route without communicating with either the source (102) or the destination (104) (see col. 26, lines 17-28, figure 17);

Thus, it is inherent in the system of Hsing (U.S. Patent No. 6,167,025) to automatically forward a failure upstream along the initial route to an alternative-route-enabled node (110), the failure message causing the alternative-route-enabled node (110) to begin forwarding packets on an alternative route.

6. In the claim 18, Hsing et al. discloses computing (pre-planned hop-by-hop), at each of the select intermediary nodes (110, 112, 114, 116, 118, 120, 122, 124, 126)

(see figure 17) to the destination device (104) of the established route (see col. 5, lines 15-25);

- storing, at each of the select intermediary nodes (110, 112, 114, 116, 118, 120, 122, 124, 126), the alternative route (see figures 3a, 3b, 3c);
- determined locally that the established route has failed (see col. 26, lines 17-28);
- forwarding packets on the alternative route (see col. 24, lines 17-28).

Thus, it is inherent in the system of Hsing (U.S. Patent No. 6,167,025) to automatically forward a failure upstream along the initial route to an alternative-route-enable node (110), the failure message causing the alternative-route-enabled node (110) to begin forwarding packets on an alternative route.

7. In the claim 24, Hsing et al. discloses a network for forwarding packets from a source device (102) to a destination device (104) and including of intermediate nodes (110, 112, 114, 116, 118, 120, 122, 124, 126), the plurality of intermediate network nodes (110, 112, 114, 116, 118, 120, 122, 124, 126) comprising:

- at least on first node (110) configured to: store an initial route (primary path, see figures 3a, b, c) from the source device (102) to the destination device (104) and at least one alternative route from the source device (102) to the destination device (104);
- detecting a failure in a downstream network node (116) in the initial route, and forwarding a packet to a node (112, 120) on one of the at least one alternative route in response to detecting the failure (see col. 26, lines 17-28);

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- at least one second node (118) configured to: store the initial route (primary route, figures 3a, b, c), detecting a failure in a downstream network node in the initial route (primary path), and forwarding a failed message to an upstream first node (110) in response to detecting the failure, the failure message causing the upstream first node (110) to forwarding a packet to a node on one of the at least one alternative route (see col. 26, lines 17-28);

Thus, it is inherent in the system of Hsing (U.S. Patent No. 6,167,025), the failed message causes the upstream first node (110) to automatically forward a packet to a node (112, 120) on one of the at least one alternative route.

8. In the claims 6, 21, Hsing discloses a mechanism to detect failure sends communication packets to downstream nodes at regular intervals (see col. 13, lines 5-30).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 4, 12, 13, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing (U.S. Patent No. 6,167,025) in view of Medard et al. (U.S. Patent No. 6,047,331).

In the claim 2, Hsing discloses the limitations of claim 1 above.

However, Hsing is silent to disclosing the network is a connection-oriented network with a plurality of established initial routes.

Medard et al. discloses the network is a connection-oriented network with a plurality of established initial route (see col. 6, lines 35-38).

Both perform network restoration by computing alternate routes and saving those alternate routes in a table to be looked up once a failure occurs.

It would have been obvious for one skilled in the art to modify the system of Hsing with the teaching of Medard provide a connection-oriented network with a plurality of established initial route in order to achieves the short-path to the destination.

11. In the claims 4, 13, 17, Medard et al. discloses the processor computes an alternative route not include the downstream network element in the initial route (see col. 5, lines 22-23).

12. In the claim 12, Medard et al. further detecting a failure is conducted locally by node preceding the failed element without requiring notification of a master server or an ingress node (see col. 10, lines 30-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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13. Claims 14, 9, 11, 19, 10, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing (U.S. Patent No. 6,167,025) in view of Cain (U.S. Patent No. 6,857,026).

In the claim 14, see figures 17, 3a, 3b, 3c, col. 26, lines 17-28, Hsing discloses the switch 118 (non-alternative-route enable node), in response to the detection of this fault releases the locally reserved capacity associated with the call(s) affected by the fault and transmits a crank-back message to the source switch (alternative-route enable node). In FIG.17, the crank-back message is represented by the arrow and dotted line extending from switch 118, the neighboring upstream switch, to the source switch 110. In response to the crank-back message, the source ATM switch 110 attempts to find an alternative route to the destination switch and destination device. In the pre-lanned source routing embodiment, this will involve checking the routing table of switch 110, e.g., the table illustrated in FIG.3C, for alternative paths (see col. 26, lines 17-28); comprising:

- A network for forwarding packets from a source device (102) to a destination device (104), network including a plurality of network element (110, 112, 114, 116, 118, 120, 122, 124, 126) including a plurality of nodes and connecting link, the plurality of nodes including at least one alternative-route-enable node (110) and at least one non-alternative-route-enable node (118), wherein the at least one non-alternative-route-enable node comprises:
- A storage space to store an initial route from the source device to the destination device (see routing table, figure 2);

- A mechanism to detect failure in a downstream network element in the initial route (see col. 26, lines 17-28);
- Forward failure message upstream along the initial route to an alternative-route-enable node (110) (see col. 23, lines 36-38, if the switch (118) does not have the capacity to handle the call being re-routed operation proceed to step 1510 and the switch (118) generates a crank-back message along the newly establish path back to the source switch (110)), the failure message causing the alternative-route-enable node to being forwarding packet on an alternative route (see col. 26, lines 17-28).

Thus, it is inherent in the system of Hsing (U.S. Patent No. 6,167,025) to automatically forward a failure upstream along the initial route to an alternative-route-enable node (110), the failure message causing the alternative-route-enabled node (110) to begin forwarding packets on an alternative route.

However, Hsing is silent to disclosing determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic;

Cain discloses a node obtains multiple routes for a destination, prioritizes the routes, and installs multiple routes in the routing table, including at least the preferred route (shorth-path route) and the alternative route (see abstract); the preferred route may be a shortest-path route, in which case the alternate route is a non-shortest path route. The

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alternate route may be associated with a different next-hop device than the preferred route (see col. 2, lines 11-14); comprising:

- determining an initial route by determining a short path from the destination device to the source device within the network, refining the path according to administrative constraints, and establishing the path as the initial route, the initial route being prioritized to establish a hierarchy for preemption in routing network traffic (see abstract, col. 2, lines 11-14, col. 3, lines 29-31);

Both Hsing and Cain are directed to routing table which including primary path and alternate path (using when the link failed). Cain recognizes the preferred route may be a shortest-path route, in which case the alternate route is a non-shortest path route. The alternate route may be associated with a different next-hop device than the preferred route (see col. 2, lines 11-14); Hence, with the teaching of Cain, it would have been obvious to one of ordinary skill in the art to modify the routing table in the system of Hsing to determine the an initial route (being prioritized) which is the short path in order to use the initial route (preferred route). The combined system would have been enable to minimize delay time in the network.

14. In the claims 9, 11, 19, Cain discloses determining a short path from the destination device to the source device within the network; refining the path according to administrative constraints; and establish the path as the initial route (see abstract, col. 2, lines 11-14, col. 3, lines 29-31).

15. In the claims 10, 15, 16, Cain discloses wherein refining the path comprises rejecting the path exceeding bandwidth allocation and hop limit (see col. 3, lines 31-35).

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16. In the claim 11, Cain discloses determining a shortest route from a node preceeding the failed element to the destination device within the network; refining the route to exclude the failed element on the initial route; and establishing the alternative route for forwarding packets (see abstract, col. 2, lines 11-14, col. 3, lines 29-31).

17. In the claim 12, Hsing discloses wherein detecting a failure is conducted locally by a node preceeding the failed element without required notification of a masterser or an ingress node (see col. 26, lines 17-28).

18. In the claim 13, Cain discloses reserve bandwidth available on the initial route; generating the alternate route by invoking a routing protocol

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system (Hsing – Medard) in view of Ohno (U.S. Patent No. 6,252,853).

Regarding claim 3, the combined system (Hsing – Medard) discloses the restoration above but fails to disclose that the route is a label switched router.

Ohno discloses a network restoration method for a label switched router in a connection-oriented network (ATM) (see abstract, figure 1, figure 2 – fault talbe, col. 1, lines 21-26).

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Both Hsing, Medard, and Ohno perform network restoration by computing alternate route and saving those alternate routes in the table to be looked up once a failure link or failure path occurs.

It would have been obvious for one skilled in the art to modify the combined system (Hsing – Medard) with Ohno label switched routing with a network restoration method. The motivation to do so is as Ohno suggest in column 1 where transfer processing of datagrams require confirmation of destination and label switching does not .

Allowable Subject Matter

Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

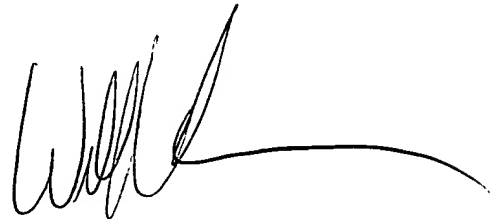
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHUONG T HO whose telephone number is (571) 272-3133. The examiner can normally be reached on 8:00 am to 4:00 pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

03/19/05

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